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BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/572,934 | WITTMER, DETLEV |
| | Examiner | Art Unit |
| | ERIC OBERLY | 2184 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *10 March 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *7,8 and 11-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *7,8 and 11-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

| Attachment(s) | |
|---|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ . |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____. | 6) ☐ Other: _____. |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 7, 11, 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Ketler et al. (US Patent # 6611208), hereinafter referred to as Ketler, in view Behrens et al. (US Patent # 6037857), hereinafter referred to as Behrens, in view of Mancini et al. (US Patent # 6583982), hereinafter referred to as Mancini, in view of Vazach et al. (US Patent 7236342), hereinafter referred to as Vazach.**

Referring to claim 7, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1,); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), wherein a calibration of the sensor

is possible with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transferring the measurement data to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler does not appear to explicitly disclose saving the measurement data to a portable storage medium which is separable from the calibration unit, transporting the storage medium in a separated state to the computer unit; connecting the storage medium with the computer unit via an interface that serves as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses saving the measurement data (data collected) to a portable storage medium (core computer) which is separable (col. 3, lines 46-50), transporting the storage medium in a separated state to the computer unit (col. 3, lines

34-35), connecting the storage medium with the computer unit via an interface (col. 3, lines 35-36).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and separable storage, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically, capacitively or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the

A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

As to claim 11, Ketler discloses method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1); and transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a

separate location, where the unit boxes are located; col. 5, lines 1-10), and further to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler does not appear to explicitly disclose a plug-in module comprising an Explosion-barrier, providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses a plug-in module of a computer unit (core computer; col. 3, lines 46-50).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and a plug-in module, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal

set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art

would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

Referring to claim 13, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1,); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further transferring the measurement data to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10); wherein: in the computer unit different sensors and measuring points are managed (col. 2, lines 45-50).

While Ketler discloses analog measurements, transferring the measurement data through an intrinsic safety barrier transfer path, and the remote computer records and analyzes relevant parameters, “sensor history” (Ketler: col. 1, lines 35-40), Ketler does not appear to explicitly disclose converting analog measured values into digital

measurement data, the intrinsic safety barrier is a galvanically decoupled transfer path, or a graphic display of the parameters. Furthermore, Ketler does not appear to explicitly disclose a plug-in module providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses a plug-in module of a computer unit (core computer; col. 3, lines 46-50) and graphic illustration of data (NOTE: the graphic illustration is inherent to the anticipated access of data through the user desktop or laptop as a graphic user interface would be required; col. 3, lines 35-40).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and a plug-in module, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between

the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

Referring to claim 14, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1,); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), wherein a calibration of the sensor is possible with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transferring the calibration data to the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10) via a standard interface at the computer (data phone line connect 204, fig. 2).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler

does not appear to explicitly disclose saving the calibration data to a portable storage medium which is separable from the calibration unit, transporting the storage medium in a separated state to the computer unit; connecting the storage medium with the computer unit via an interface that serves as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses saving the measurement data (data collected) to a portable storage medium (core computer) which is separable (col. 3, lines 46-50), transporting the storage medium in a separated state to the computer unit (col. 3, lines 34-35), connecting the storage medium with the computer unit via an interface (col. 3, lines 35-36).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and separable storage, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically or inductively.

However, Vazach discloses a separable interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines

1-10) providing galvanic separation, which occurs either optically, capacitively or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer

of Mancini so that data collected within the hazardous area maybe safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

As to claim 15, the combination of Ketler, Behrens, Mancini, and Vazach discloses the computer unit provides a history of the sensor using the calibration data (Ketler: relevant parameters are recorded and analyzed by computer; col. 1, lines 35-40) transferred from the portable storage medium (Mancini: user desktop or laptop provides access to collected data; col. 3, lines 35-40).

As to claim 16, while Ketler discloses the measurement data is transferred to the computer unit via a standard interface (data phone line connect 204, fig. 2) provided at the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10), the combination of Ketler, Behrens, and Mancini does not appear to explicitly disclose connection to the interface that serves as an Explosion-barrier.

However, Vazach discloses the connection interface serves as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically

or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to provide a removable storage medium such as the core computer

of Mancini so that data collected within the hazardous area maybe safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

Referring to claim 17, Ketler discloses a method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1,); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), calibrating the sensor with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transferring the calibration data from the calibration unit to an interface (DX4404B card is proprietary multipurpose field input-output cards, col. 6, lines 40-50,...the calibrated sensor signals from the Rem Cal modules are passed onto the DX4404B cards, col. 9, lines 30-31), transferring the calibration data from the interface to the computer unit via a standard interface (data phone line connect 204, fig. 2) provided at the computer unit (Communications with a central computer transfer sensor data, digital

inputs and control commands in a digital format; col. 7, lines 1-10), wherein: the computer unit provides a history of the sensor using the calibration data (remote computer records and analyzes relevant parameters; col. 1, lines 35-40).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data, the intrinsic safety barrier is a galvanically decoupled transfer path, the interface is embodied as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30). Furthermore, Mancini discloses data (data collected) transferred from a portable storage medium (core computer; col. 3, lines 34-50).

While the combination of Ketler, Behrens and Mancini discloses a combination of galvanic isolation and a plug-in module, the combination does not appear to explicitly disclose the separable interface serves as an Explosion barrier providing galvanic separation, which occurs either optically, capacitively or inductively.

However, Vazach discloses a separable interface embodied as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a first conductor pair from non-intrinsically safe network and a

second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30).

Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, and Vazach before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the portable storage medium of Mancini, and the separable barrier interface of Vazach because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the separable medium would allow data to be safely collected and removed for use in a non-intrinsically safe environment, and the separable barrier would provide isolated connection between intrinsically and non-intrinsically safe systems.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art

would be motivated to provide a removable storage medium such as the core computer of Mancini so that data collected within the hazardous area maybe safely removed for use in a non-hazardous area (see Mancini col. 3, lines 46-50).

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, and Vazach to obtain the invention as specified in the instant claim.

**Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination Ketler in view Behrens in view of Vazach, in view of Barros De Almeida et al. (US Patent # 6839790), hereinafter referred to as Barros De Almeida.**

As to claim 8, Ketler discloses method for safe data transfer between an intrinsically safe sensor (sensors 201, fig. 2, co. 4, lines 49-50) and a non-intrinsically safe computer unit (central computer 205, fig. 2, col. 5, lines 1-20), comprising the steps of: analog measured values measurement data (parameters being measured, col. 4, lines 24, analog signals from the sensor, col. 7, line 1,); transferring the measurement data to a sensor-module head (unit box 202, fig. 2) of the sensor via a transfer path (sensors 201 per unit box 202 feed signals from the monitored area into a separate location, where the unit boxes are located; col. 5, lines 1-10), and further to a calibration unit (Rem-Cal module 509, fig. 5, col. 7, lines 10-20), wherein a calibration of the sensor is possible with the help of the calibration unit (Rem-Cal circuitry generates a new, calibrated 4-20 mA analog signal, faithful to the uncalibrated, linear sensor output signal; col. 8, lines 25-35); transfer the measurement data from the calibration unit to an

interface (DX4404B card is proprietary multipurpose field input-output cards, col. 6, lines 40-50,...the calibrated sensor signals from the Rem Cal modules are passed onto the DX4404B cards, col. 9, lines 30-31), transferring the measurement data from the interface to the computer unit via a standard interface (data phone line connect 204, fig. 2) provided at the computer unit (Communications with a central computer transfer sensor data, digital inputs and control commands in a digital format; col. 7, lines 1-10); and data transfer between the sensor and the calibration unit occurs with a protocol (NOTE: the protocol the proprietary Rem-Cal card uses; col. 6, lines 40-41).

While Ketler discloses analog measurements and transferring the measurement data through an intrinsic safety barrier transfer path, Ketler does not appear to explicitly disclose converting analog measured values into digital measurement data or the intrinsic safety barrier is a galvanically decoupled transfer path. Furthermore, Ketler does not appear to explicitly disclose the interface embodied as an Explosion-barrier providing a galvanic separation, which occurs either optically, capacitively or inductively; the standard interface at the computer unit is a USB-interface; and a protocol is in accordance with the RS485 standard.

However, Behrens discloses converting analog measured values into digital measurement data (analog and converted to digital signals according to well known analog to digital conversion techniques; col. 7, lines 35-37) and a galvanically decoupled transfer path (data lines 56' through galvanic isolator 96, fig. 7, col. 10, lines 15-30), Vazach discloses an interface embodied as an Explosion barrier (a barrier for high speed serial networks comprising a housing having a first terminal set receiving a

first conductor pair from non-intrinsically safe network and a second terminal set for receiving a second conductor pair from an intrinsically safe network; col. 3, lines 1-10) providing galvanic separation, which occurs either optically, capacitively or inductively (Two series connected capacitors 46 (also connected in series with the resistor 44 between the second terminal of fuse 36 and with the conductor 34) form a direct current blocking element 45 blocking direct current flowing between conductor 34 and 34'; col. 6, lines 20-30), and Barros De Almeida teaches the standard interface at the computer unit is a USB-interface (a host having a Universal Serial Bus (USB) port; col. 4, line 9) and a protocol is in accordance with the RS485 standard (col. 5, lines 40-50).

Ketler, Behrens, Vazach and Barros De Almeida are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Vazach and Barros De Almeida before him or her, to modify the field monitoring and communication system of Ketler to include the analog to digital conversion and galvanic decoupled transfer path of Behrens, the barrier interface of Vazach, and the USB interface of Barros De Almeida because the A/D is well known in the art and would provide compatibility to digital systems (see Ketler, col. 7, lines 8-10), the galvanic decoupled transfer path provides and obvious variant the anticipated intrinsic safety barrier, the barrier interface would provide isolated connection between intrinsically and non-intrinsically safe systems, and the USB interface would provide an obvious variant to anticipated communication interfaces providing further plug and play advantages.

The suggestion/motivation for doing so would have been, as Behrens suggests, a circumstance in which the entire industrial controller is contained inside a hazardous area (see Behrens, Fig. 2, col. 5, lines 40-46), a person having ordinary skill in the art would be motivated to incorporate well known intrinsically safe circuitry, barriers, and industry standard interfaces to provide safe and high speed data collection within the hazardous area for use in a non-hazardous area (Behrens col. 2, lines 45-50; Vazach col. 3, lines 1-10; ).

Therefore, it would have been obvious to combine Ketler, Behrens, Vazach and Barros De Almeida to obtain the invention as specified in the instant claim.

**Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ketler, Behrens, Mancini, and Vazach as applied to claims 11 and 17 above, and further in view of Barros De Almeida.**

As to claim 12, while the combination of Ketler, Behrens, Mancini, and Vazach discloses a plug-in module, the combination does not appear to explicitly disclose the interface of the plug-in module conforming to a PCMCIA plug-in card.

However, Barros De Almeida teaches a PCMCIA interface connection (col. 1, lines 65-67).

Ketler, Behrens, Mancini, Vazach and Barros De Almeida are analogous art because they are from the same field of intrinsically safe data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, Vazach and Barros De

Almeida before him or her, implement the plug-in core computer as taught by the combination of Ketler, Behrens, Mancini, and Vazach as a PCMCIA connection as taught by Barros De Almeida as background in the field of the art.

Mancini discusses the concept of transferable computer cores as a module containing some essential components of a computer, but lacking any usable interface (see Mancini; col. 1, lines 50-56); as PCMCIA cards, also commonly known as PC Cards, are widely used in the computer industry since their creation in 1991, a person having ordinary skill in the art would be motivated to use such a common standard to implement the transferable core computer as described by Mancini.

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, Vazach, and Barros De Almeida to obtain the invention as specified in the instant claim.

As to claim 18, the combination of Ketler, Behrens, Mancini, and Vazach data transfer between the sensor and the calibration unit occurs with a protocol (NOTE: the protocol the proprietary Rem-Cal card uses; col. 6, lines 40-41).

The combination does not appear to explicitly disclose the standard interface at the computer unit is a USB-interface and the protocol is in accordance with the RS485 standard.

However, Barros De Almeida teaches the standard interface at the computer unit is a USB-interface (a host having a Universal Serial Bus (USB) port; col. 4, line 9) and a protocol is in accordance with the RS485 standard (col. 5, lines 40-50).

Ketler, Behrens, Mancini, Vazach and Barros De Almeida are analogous art because they are from the same field of intrinsically safe data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, Vazach and Barros De Almeida before him or her, to use a computer unit with an USB interface as taught by Barros De Almeida, because combination anticipates a serial network port (see Behrens; col. 3, line 38) and a person having ordinary skill in the art would be motivated to incorporate a USB interface and RS485 standard because they have become industry standards in serial communication.

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, Vazach and Barros De Almeida to obtain the invention as specified in the instant claim.

**Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ketler, Behrens, Mancini, and Vazach as applied to claims 11 and 17 above, and further in view of Parker et al (US Patent # 5405512), hereinafter referred to as Parker.**

As to claim 19, while Ketler that relevant parameters are recorded and analyzed by computer (col. 1, lines 35-40), the combination of Ketler, Behrens, Mancini, and Vazach does not appear to explicitly disclose the computer analyzes the parameters to make an assessment of the life span of an electrode in a sensor.

However, Parker discloses an assessment of the life span of an electrode in a sensor (sensing electrode, col. 2, lines 30-35; the sensing circuit 58 detects a drop in

current from any of the anode electrodes relative to the others of the anodes as an indication of the end of the useful life of the sensor, col. 3, lines 25-30).

Ketler, Behrens, Mancini, Vazach and Parker are analogous art because they are from the same field of sensor data collection.

At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Ketler, Behrens, Mancini, Vazach and Parker before him or her, to analyze the relevant parameters to assess the life span of the sensing electrode as taught by Parker because the assessment would provide the user an indication that the sensor must be replaced.

The suggestion/motivation for doing so would have been to provide the system monitor an indication when the sensor must be replaced (Parker: col. 3, lines 35-40)

Therefore, it would have been obvious to combine Ketler, Behrens, Mancini, Vazach and Parker to obtain the invention as specified in the instant claim.

### ***Response to Arguments***

Applicant's arguments filed 3/10/2011 have been fully considered but they are not persuasive.

In regards to the rejection of claim 7 under 35 USC 103(a) over Ketler in view of Behrens, Mancini and Vazach, the Applicant submits:

> "…such a combination would not be reasonable…using a portable storage medium to safely transport data from the calibration unit to the central computer is not necessary, or even useless. For the same reason it would be useless to provide a separable interface as an

Explosion barrier according to Vazach for connecting the core medium of Mancini with the central computer of the system disclosed by Ketler.

According to the Examiner the motivation for combining Ketler, Behrens, Mancini and Vazach would have been a circumstance in which the entire industrial controller is contained inside a hazardous area (Behrens, Fig. 2, col. 5, lines 40-46). How can a third document (Behrens) suggest combining Ketler with Mancini? This is particularly questionable, since neither Ketler nor Mancini disclose industrial controllers. The system disclosed by Ketler is an environmental monitor system with sensors distributed within a hazardous area (col. 1, l. 23-29). The information of the distributed sensors should be reported to a control room remote from the sensors and in a safe area (col. 1, l. 34-35 and col. 5, l. 37-38). The whole Ketler reference advises against placing the unit boxes with the Rem Cal cards within the hazardous environment (col. 1, l. 27-65; col. 2, l. 42-44; col. 5, l. 48-53). Hence, a skilled person would not be motivated by Behrens to modify the system according to Ketler using in addition the disclosures of Mancini and Vazach."

The Examiner respectfully disagrees. In the sections cited by the Applicant, the reference Ketler discloses the requirement of an operator to periodically calibrate sensors to ensure accuracy and the anticipated dangers involved with the sensor's physical location (col. 1, lines 56-65). Nowhere does Ketler advice against the placing of the calibration equipment within the hazardous environment, as alleged by the Applicant. Ketler simply seeks to mitigate the safety risks involved with the calibration equipment by situation the equipment within a safe area. Another approach to mitigating the safety hazard of electrical equipment used to monitor a hazardous environment is to design the system and equipment to be intrinsically safe, as disclose by Behrens, thereby allowing the equipment to operate within the hazardous environment.

Behrens suggests that often a controlled process may require control points in a hazardous environment (col. 1, lines 29-30), Behrens also suggests the costs required to provide a removed non-hazardous control area is substantially driven by the require barriers, isolators, and long runs of wires (col. 2, lines 45-50). Behrens provides motivation to provide intrinsically safe control equipment as well as removal of costly components required for remote monitoring. A person of ordinary skill in the art would recognize that by using an intrinsically safe removable memory, the control point data can be removed from the hazardous area without require the costly communication components. Though the Applicant asserts that neither Ketler nor Mancini disclose industrial controllers, as indicated in the rejection, Ketler, Behrens, Mancini, and Vazach are analogous art because they are from the same field of endeavor, intrinsically safe data collection and transmission.

In regards to the rejection of claim 8 under 35 USC 103(a) over Ketler in view of Behrens, Vazach and Barros De Almeida, the Applicant submits:

> "… this combination would still not lead to the feature "transferring the measurement data from the calibration unit to an interface which is embodied as an explosion-barrier providing a galvanic separation (...) and transferring the measurement data from the interface to the computer unit". Instead, the measurement data provided by sensors 501 would be transferred to the intrinsic safety barriers 502 and from these to the Rem Cal card (calibration unit); or to put it bluntly, according to claim 8 the transfer path is "sensor ->sensor module head -> calibration unit -> Explosion barrier (galvanic separation) -> computer". According to the combination of Ketler and Vazach suggested by the Examiner the transfer path would be "sensor -> sensor module

head (= unit box 500) -> Explosion barrier with galvanic separation (intrinsic safety barrier 502 embodied as disclosed in Vazach) -> calibration unit (Rem Cal card) -> computer".

The Examiner respectfully disagrees. Figures 2 and 5 of Ketler discloses a transfer path which is "sensor (501) ->sensor module head (unit box at intrinsic safety barrier 502) -> calibration unit (Rem Cal card 509)-> interface to communication bus (204) -> computer". As indicated above, Behrens suggests controls points are often within a hazardous environment, for such, the intrinsic safety of the equipment, such as the unit box components, must be adapted. Vazach provides a barrier for high speed serial networks such as the communication bus of Ketler. Therefore, with the motivation to provide data from an intrinsically safe control point, as indicated in the rejection, the data path becomes "sensor (Ketler: 501) ->sensor module head (Ketler: unit box at intrinsic safety barrier 502) -> calibration unit (Ketler: Rem Cal card 509)-> Explosion barrier (Vazach: barrier for serial network; col. 3, lines 1-10) -> computer (Ketler: fig. 2)".

The Applicant further submits:

"…in the Ketler reference the Rem Cal card is part of the unit box 500, hence the feature "transferring the data to a sensor-module head (...) and further to a calibration unit" is not disclosed…"

The Examiner respectfully disagrees. The claim language is vague with respect to the sensor module head, as indicated above the data transfer path to the calibration unit is as follows: sensor (501) ->sensor module head (unit box at intrinsic safety barrier 502) -> calibration unit (Rem Cal card 509).

In regards to the rejection of claim 13 under 35 USC 103(a) over Ketler in view of Behrens, Mancini and Vazach, the Applicant submits:

> "…Mancini does not disclose the feature "a graphic illustration of the history of the sensor is provided at the computer unit" of claim 13. The Examiner alleges that a graphic illustration is inherent to the anticipated access of data through the user desktop or laptop as a graphic user interface would be required. However, the mere mentioning of a graphic user interface cannot anticipate displaying a graphic illustration of a sensor history. Mancini is completely silent about sensor history data or graphic illustrations. Mancini merely discloses that "data collected" is accessed by the desktop or laptop or any other computer or any other computer operations are performed (col. 3, l. 46-50)."

The Examiner respectfully disagrees. Ketler discloses sensor measurements and the remote computer records and analyzes relevant parameters (Ketler: col. 1, lines 35-40), which to one of ordinary skill in the art is a reasonable interpretation of the limitation "history of the sensor". Furthermore, Ketler anticipates monitoring and calibrating performed by an operator (col. 1, line 59), in order for such to occur, the operator must be presented with the collected data in some form. One of ordinary skill in the art can quickly conceive two of the most common mediums to present data to a user/operator, physical print or displaying the data as a graphic on a computer monitor. Mancini discloses the graphic display of data, and such a technique would have been obvious to one of ordinary skill in the art at the time of the invention.

## ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

## ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC T. OBERLY whose telephone number is (571)272-6991. The examiner can normally be reached on Monday - Friday 7:30 - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Henry Tsai can be reached on (571) 272-4176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

E. T. O.

/Henry W.H. Tsai/

Supervisory Patent Examiner, Art Unit 2184